

HOLOSTEUM UMBELLATUM (CARYOPHYLLACEAE) IN THE UNITED STATES: POPULATION EXPLOSION AND FRACTIONATED SUICIDE¹

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"Among other common lies, we have the *silent* lie—the deception which one conveys by simply keeping still and concealing the truth. Many obstinate truth-mongers indulge in this dissipation, imagining that if they *speak no lie*, they lie not at all."

Thus Mark Twain on the Silent Lie. His comments apply well to the customary treatment given introduced plants in American floras and monographs. Weeds are considered unworthy of serious attention, and when not ignored completely are so superficially treated that accurate information about them cannot be obtained from standard reference works. This is a violation of the supposed objectivity of science. Weeds have much to tell us about migration which could shed light on such problems as the post-glacial spread of plants and the history of the Coastal Plain flora; much about adaptability and variability that could shed light on the evolution of higher plants in general, and about the origins of cultivated plants in particular. The United States, with its continent-wide area, ready accessibility, and historically recent invasion by alien plants, offers a rare opportunity to study unwitting experiments in phytogeography and evolution. It is particularly reprehensible for American botanists to be so neglectful of weeds.

Dr. Piehl's report in 1962² of *Holosteum umbellatum* as new to Michigan prompted me to look further into available information about this Old World species. Material in the SMU Herbarium indicated that Piehl's report, citing references dealing only with the northeastern states, did not give anything like an accurate picture of the plant's distribution. A check of additional regional and state floras, of reports published in botanical journals, and of Old World floras, revealed that the history of *Holosteum umbellatum* in the United States has followed a distinctive pattern, one that is entirely logical in relation to what is apparently its true home, and suggests what may have been its unrecorded history in Europe and northern Africa. It strikingly refutes the vulgar notion that the geography of weeds is meaningless. It also illustrates another common dissipation of American botanists, the *careless* lie: the loose assertion that most of our weeds are introduced from Europe or native of Europe, which is at best imprecise and at worst untrue.

Let me review in order the facts I was able to uncover, beginning with the best possible kind of recorded facts, actual specimens of the plant.

¹ All notes are at end of article.

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HERBARIUM COLLECTIONS³

Though not huge, the SMU Herbarium does have a well diversified representation of the floras of the United States and Europe. The label data for the collections of *Holosteum umbellatum* had, in skeleton form, most of the essentials of the whole story of the species as later developed. There are at present 26 specimens, as follows.

ARKANSAS. Washington Co.: Fayetteville, *D. M. Moore* 490008, 31 March 1949. GEORGIA. Clarke Co.: waste places at edge of University campus [Athens], seen only in one spot, *Arthur Cronquist* 4223, 1 April 1947. ILLINOIS. Champaign Co.: roadside, 2 miles south of Philo, *R. A. Evers* 78879, 30 April 1964. Shelby Co.: roadside, 3 miles east of Westervelt, *Evers* 78931, 1 May 1964. Vermilion Co.: along C. & E. I. R. R., south of Rossville, *Evers* 78975, 5 May 1964. KANSAS. Barber Co.: 1 mile east of medicine Lodge, sandy soil, gypsum, locally abundant, *R. L. McGregor* 14192, 24 April 1959. Douglas Co.: 2 miles south of #59 & 50 junction, in thick patches scattered on shoulder of highway, *S. W. Jacks* 320, 19 April 1960. Montgomery Co.: 5 miles south of Independence, roadside bank, *McGregor* 15253, 14 April 1960. Woodson Co.: 8 miles north of Yates Center, roadside bank, locally abundant, *McGregor* 16821, 2 May 1961. MASSACHUSETTS. Essex Co.: in beds at Gray & Cole's Nursery, Ward Hill, Haverhill, *S. K. Harris (Pl. Exs. Gray. 833)*, 14 May 1933. NORTH CAROLINA. Cabarrus Co.: cultivated field, 3 miles north-northeast of Harrisburg, *Harry E. Ahles (with C. R. Bell)* 11642, 29 April 1956. OKLAHOMA. Cleveland Co.: ½ mile east of Biology Building, Oklahoma University [Norman], *U. T. Waterfall* 7858, 10 April 1948. OREGON. Sherman Co.: along route 30, west of Biggs, *Albert N. Steward* 6866, 6 May 1955. Wasco Co.: along banks of Deschutes River at Shearars Bridge, *W. H. Baker* 611, 10 April 1938. TENNESSEE. Rutherford Co.: roadside, 7 miles north of Murfreesboro, *Ralph M. Kriebel* 9256, 13 April 1941. VIRGINIA. Montgomery Co.: campus weed, V.P.I. [Blacksburg], *R. Kral* 9790, 5 April 1960. Spotsylvania Co.: fields, Fredericksburg, *Hugh Iltis* 118, 14 April 1941. WASHINGTON. Benton Co.: abundant in fine-grained soil among basaltic outcrops along the Columbia River, 1.5 miles east of Mottinger, *Cronquist* 5650, 4 April 1950.

AUSTRIA. Vienna (other data illegible), *J. Kerner* 4901, in 1869. CZECHOSLOVAKIA. Vicinity of Brno, weedy places, *Collector Unknown*, "April, sometimes October," year not given (1830—1840?). GERMANY. Brandenburg, sandy fields, *Goerz*, 1 May 1912. Oberhessen, Kr. Alsfeld, Gr. Felda, fields, *H. Hupke*, 11 May 1960. SWEDEN. Oeland, Vickleby s:n, Sandbergen, gravelly beach, *C. M. Norrman*, 20 May 1960. SWITZERLAND. Valais (Wallis): region of Ausserberg, copses on the chalets of Leiggern, alt. 1590 m., *P. Villaret* 11923, 3 June 1951. Sitten, *Dr. E. Rohrer*, 9 April 1912.

IRAQ. Ledges on broken limestone slopes, Aqra, in Mosul Liwa, N. Polunin *et al.* (*Fl. Iraq* 35), 16 March 1956.

When Dr. Piehl's paper appeared, I had on loan the Caryophyllaceae from North Carolina State College. Later (October, 1964) I examined specimens on visits to the Missouri Botanical Garden and Iowa State University (Ames). Evidence from the additional material was in agreement with that from the SMU collections, except for supplying some older U.S. records. Two deserve mention here. NORTH CAROLINA. Buncombe Co.: Biltmore, cultivated grounds, *Biltmore Herb.* 1340, 18 April 1896 (NSC); also 1340b, same but dated 3 April 1897 (MO, NSC). OREGON. Grant Co.: along rocky dry bed of wash, Kimberley, L. F. Henderson 5019, 1 May 1925 (MO).

Several items of interest emerge from the above. First, of course, the western limits known to Piehl (Michigan, Ohio, Kentucky; partly quoted from Fernald) had been greatly exceeded, even within the Gray's Manual range, for more than a decade before his paper appeared. Though present in the eastern states for more than a century, and persisting at some of its early localities, it has not become generally distributed or common there, where it is most often found in cultivated habitats (fields, lawns, gardens). In the central and far western states, where it appeared much later, it has been spreading much more rapidly, mainly on non-cultivated habitats (roadsides, naturally disturbed ground along streams), and appears to be distinctly calciphile (basalt and gypsum mentioned for two collections; many localities in areas of limestone or calcareous glacial till). It also appears not to favor extremely cold regions, and to be appearing more extensively in somewhat drier sections. The European collections mostly confirm what Linnaeus said about the habitat of the species when he named it in 1753: "in fields of Germany and France." This matches the preference it has shown in the eastern United States, and raise the suspicion that in Europe also it was an introduction. The Iraq specimen cited, from naturally disturbed habitat on limestone, parallels Oregon and Washington reports, and suggests that in those states the species has found something more like its original home than it did in the Atlantic states or Europe.

PUBLISHED RECORDS: CENTRAL AND EASTERN

Fortunately *Holosteum umbellatum* is very distinct from other chickweeds, and it is probable that most if not all published records can be accepted as correct. For a number of the following reports I have seen confirming specimens (not always the original ones). Although the information about *Holosteum umbellatum* in current manuals is quite incomplete, the reports are worth quoting, especially for comparison with older publications. Below are summarized the reports in manuals and state or local floras in chronological order; those from journals follow in a separate list.

1856. Hills around Lancaster, Pennsylvania, abundant. (Gray, Man. 2nd ed.; same statement in 3rd ed., 1857, and 4th ed., 1862.)
1867. Hills around Lancaster, Penn., and Morris Co., N. Jersey. (Gray, Man., 5th ed.; same statement in 6th ed., 1889.)
1897. Locally established in Pennsylvania, New Jersey, and Delaware. (Gray, Syn. Fl. vol. 1 pt. 1.)
Very abundant in the vicinity of Lancaster, Pa.; Delaware. Naturalized from Europe. Native also of northern Asia. (Britton & Brown, Ill Fl. 1st ed.)
1901. Penn. and Del. (Britton, Man., 1st ed.; same statement in 2nd ed., 1905, and 3rd ed., 1907.)
1903. In waste places and cultivated grounds, Pennsylvania, Delaware and Georgia. (Small, Fl. S.E. U.S., 1st ed.)
1908. Roadsides, fields, etc., N.J. and Pa. to Ga. (Gray, Man., 7th ed.)
1913. Common, in fields, woods, and waste places. (Small & Carter, Fl. Lancaster Co., Pa.)
1933. Cult. grounds, roadsides, and waste places, Coastal Plain, Ga. to Pa. and N.J. (Small, Man.)
1943. Grassy fields and roadsides, Fayette Co., Kentucky. (Braun, Annotated Catalog of Spermatophytes of Kentucky.)
1950. Fields, roadsides and cult. ground, e. Mass. to Ga., Ky., and O. (Gray, Man., 8th ed.)
1952. Native of Eurasia; naturalized at various stations from N.J. and Pa. southward and perhaps elsewhere. (Gleason, New Britton & Brown Ill. Fl.)
1953. Established at Enterprise, Harrison Co., W. Va. (Strausbaugh & Core, Fl. W. Va.)
1954. Native of Eurasia, occasionally found as a weed in our range. (Gleason & Cronquist, Man.)
1955. Range: Mass.-Ohio-Ill.-Mo.-Ga.; Wash.-Ore.-Ida.; Eurasia; N. Africa. Roadsides, fields, and waste places; nat. from Europe. ILLINOIS: Christian Co., in 1953; Johnson Co., 1951, 1952; Lawrence Co., 1952. (Jones & Fuller, Vascular Plants of Illinois.)
1958. (Included without remarks in Goodman, Spring Flora of Central Oklahoma.)
1960. Add 11 more Illinois counties. (Winterringer & Evers, New Records for Illinois Vascular Plants, Sci. Pap. Ill. State Mus. vol. XI.)
1961. In fields and waysides, middle Coastal Plain to Blue Ridge, 9 counties in Virginia. (Massey, Virginia Flora.)
1962. Occurs along roadsides and railroads. Recently introduced . . . now spreading rapidly. Established in southern and central Missouri north to St. Louis and Boone counties. First recorded from Washington County in 1950. (Steyermark, Fl. Missouri.)

1964. Fields, roadsides, and waste places; mts. and pied., North Carolina; specimens also seen from Va., Ga., Tenn., Ky., W. Va. (Radford, Ahles & Bell, Guide to the Vascular Flora of the Carolinas.)
1965. Mapped for 20 counties in North Carolina, 5 in South Carolina. (Radford, Ahles & Bell, Atlas of the Vascular Flora of the Carolinas.)

To the above may be added information from botanical journals with records of eastern plants. Of those checked, three fortunately had most helpful cumulative indexes, two had only annual volume indexes. The oldest journal, *Bulletin of the Torrey Botanical Club*, (started 1870), contained only a single reference to *Holosteum umbellatum* in the United States. This was in a table listing plants germinated from soil taken from old fields and forests in Durham County, North Carolina, showing that the species grew in 1938 from soil from a field cultivated in 1937, but was not obtained from any other soil samples (vol. 67: 258, 1940). The now defunct companion journal *Torreya* (1901—1945) also contained but one reference: the species was observed at Orient State Park, Long Island, New York (34: 141, 1934). *Bartonia* (started 1908) had no records. *Castanea* (started 1936) reported the species twice: in 1950 for Amherst County, Virginia, where collected in 1947 (15: 16); in 1955 from near Collinsville, Polk County, North Carolina, "infrequent in old fields," year not stated (1951 or later) (20: 45). Much more numerous were the records in *Rhodora* (started 1899), which are summarized below in chronological order (volume and page in parentheses).

- 1924 (26: 199). Found at the Hiti Nurseries, Pomfret, Connecticut, 30 May 1924, "abundant all through the nurseries." First authentic record for New England.
- 1931 (33: 211). Found in the edges of lawns along the Cliff Walk at Newport, Rhode Island, 30 May 1931.
- 1933 (35: 261). In beds in Gray and Cole's Nursery, Haverhill, Massachusetts, spring of 1932; new to the state. Thought to have come with plant shipments from the Hiti Nurseries (see 1924 report).
- 1938 (40: 415). Cultivated field 1 mile south of Emporia, Greensville County, Virginia; found in April, 1938, stated to be "very local in eastern Virginia."
- 1943 (45: 400). Found in Essex and Hanover counties, Virginia, April, 1942. "Apparently spreading; new or sandy roadside-fills. . . . Perhaps introduced in foreign seed used on new soft shoulders."
- 1945 (47: 45). Cultivated field at State College, Pennsylvania, 17 May 1943; first collection from local area.
- 1952 (54: 253). Collected 1 mile south of Caledonia, Washington County, Missouri, 22 April 1950; new to the state.
- 1958 (60: 15). Roadside, northwest of Gaffney, Cherokee Co., South Carolina; Anderson Bridge over the Enoree River, Spartanburg Co., South Carolina; first definite records for the state.

- 1960 (62: 93, 108, 115, 262). "This naturalized species has become somewhat frequent in central and southcentral Kansas . . . on sandy soils of lawns, fields, and roadside banks." Six counties listed; one specimen cited as collected in 1959, no other dates given.—Listed for Massachusetts, Connecticut, and Rhode Island only among New England states, said to be local.—Found still persisting after 22 years in nursery at Haverhill, Massachusetts (see 1933 record).
- 1962 (64: 222). Reported from three stations in southeastern Michigan, lawns and gardens, collected 1949, 1955, 1958; new to Michigan.

Allowance must of course be made for the fact that there was not uniform collecting throughout the central and eastern states, coverage being much better for the Northeast and Midwest than for the South. Also some likely sources, such as state academy transactions, have not been checked. Some have been omitted because they merely repeated references in the above lists, or were entirely negative. One in the latter category deserves mention here because of its thoroughness: Deam's *Flora of Indiana* (1940), in which there is no record of the plant. But if the assembled information is not complete, it is extensive, and permits some conclusions to be drawn.

Most of the manuals, especially the more recent ones, are guilty in varying degree of the silent lie. This perhaps is justifiable, since they attempt to condense a vast amount of information. Less excusable is what may be called the *careless* lie. For example, when the distribution is given as "Mass. to Ga., Ky., and O.," the implication is that the area is more or less continuous within those limits, but this is not so. Then there is the constantly repeated statement, "introduced from Europe." This really is not known; it might have been from Asia or Africa, or another part of North America (in fact the first Massachusetts occurrence was quite definitely stated to be the result of introduction from Connecticut). The similar statement, "native of Europe," is a loose assumption for which there is no positive proof. It is also quite indefinite; the flora of Europe is not homogeneous throughout.

The general picture obtained from published records agrees with and amplifies that from herbarium specimens. *Holosteum umbellatum* was introduced into the United States, precise source and means of entry unknown. Reported in 1856 as abundant around Lancaster, in southeastern Pennsylvania, it was recorded as common there in 1913; yet at State College in central Pennsylvania, less than 100 airline miles away, it was collected for the first time in 1943. Collections and reports show that during the 1940's and 1950's it appeared rather suddenly at many widely separated localities. In Illinois, Missouri and Kansas, in contrast with its behavior in Pennsylvania, it proceeded to spread rapidly. The suggestion made in 1943 that it was perhaps introduced with foreign seed used on new road shoulders in Virginia seems a very probable

explanation for its sudden appearance in other states as far away as Kansas. Difference in quantity of seed brought in during the earlier and later periods, and difference in climatic and soil conditions between Midwestern and Atlantic states, may explain the great increase in number of localities from about 1940 on, and the much greater success in becoming established and spreading locally in the Midwest than was the case when first introduced farther east.

PUBLISHED RECORDS: FAR WESTERN

The qualifying remarks about central and eastern records apply here also, but again the available information is reasonably adequate, particularly in view of the much shorter period of time and smaller area involved. Of the two western botanical journals searched for records, *Madrono* (started 1916) contained none, and *Leaflets of Western Botany* (started 1932) only one, included below with those from manuals and floras. The 1925 Oregon collection cited previously is one year older than the earliest report in print.

- 1937. A weed, recently introduced from Europe, collected in 1926. Fields, Pullman; opposite Clarkston; Lewiston. Upper Sonoran, Arid Transition. (St. John, Fl. S.E. Washington & Adj. Idaho, 1st ed. Same statement in 2nd ed., 1956, and 3rd ed., 1963.)
- 1941. Established in various places along the Columbia R. east of the Cascades. (Peck, Man. Higher Plants of Oregon, 1st ed.)
- 1944. Sparingly introduced in eastern Oregon, Washington, and also in the Atlantic States. Native of Europe and northern Asia. (Abrams, Ill. Fl Pacific States.)
- 1952. Introduced into E. Wash. and Oreg., W. Idaho, and the Atlantic States. (Davis, Fl. Idaho.)
- 1957. A native of Europe, this species has become established sparingly east of the Cascades, sometimes occurring as a grainfield weed. (Gilkey, Weeds of the Pacific Northwest.)
- 1961. Established in various places along the Columbia R. east of the Cascades and in central Lake Co. (Peck, Man. Higher Plants of Oregon, 2nd ed.)
- 1964. Collected . . . on May 11, 1964, at Grenada, Siskiyou County, California . . . It has been known along the Pacific Coast from southern British Columbia to Lake County, Oregon, but this is the first record we have seen from California. (J. T. Howell, Leaflet. Western Botany 10: 128.)

Silent lies and careless ones are less obtrusive than in some of the eastern manuals. Abrams' reference to northern Siberia, evidently copied from the Britton and Brown *Illustrated Flora* (1st or 2nd ed.), belongs to the kind for which a polite adjective cannot be used. The general picture for the far western states resembles that for the central ones. In-

troductio came relatively late, and there has been markedly successful establishment and local spread. Although Howell used the phrase "along the Pacific Coast," all records for the United States are from inland.

PUBLISHED RECORDS: OLD WORLD

The number of references in which Old World occurrences of *Holosteum umbellatum* are reported is of nearly astronomic proportions. There is also the complication of segregate species recognized by some authors but not others. With one exception (Egypt) I have considered only listings of *H. umbellatum* var. *umbellatum*. Following is a selection of reports in standard floras, translated into English when not originally in that language, sometimes paraphrased or summarized.

EUROPE. On light often sandy soils, usually in disturbed habitats. Most of C, E. & S. Europe, extending northwards to S. Sweden and England. (Tutin et al., *Flora Europaea* vol. 1, 1964.) SCANDINAVIA. Mapped for eastern Denmark, along or near the coast in extreme southern to southeastern Sweden, and nearby islands in the Baltic Sea. (Hulten, *Atlas of the Distribution of Vascular Plants in N.W. Europe*, 1950.) BRITISH ISLES. Doubtfully native. A very rare plant of walls, roofs and sandy soils. Formerly Surrey, Norfolk and Suffolk, where it may still persist. Europe northwards to S. Sweden, N. Africa, W. Asia. Commonly with other small annuals . . . in C. Europe usually in man-made habitats. (Clapham, Tutin & Warburg, *Flora of the British Isles*, 2nd ed., 1962.) FRANCE. Sandy and rocky places, in a large part of France; rare in the Southwest and in the Mediterranean section. (Coste, *Flore Descriptive et Illustrée de la France*, vol. 1, 1901. Fournier, *Les Quatre Flores de la France*, 1936 (reprint 1946 and 1961), apparently says much the same, but uses some abbreviations which are nowhere explained.) SPAIN. (Caballero, *Flora Analítica de España*, 1940, includes the species, but since the book consists only of keys, there is no information as to distribution or habitat.) PORTUGAL. Fields, roadsides, walls; vicinity of Braganca and Miranda, Upper Douro. (Coutinho, *Flora de Portugal*, 2nd ed., 1939. Sampaio, *Flora Portuguesa*, 2nd ed., 1946, mentions only the province in which these localities are found, Tras-os-Montes, extreme northeastern Portugal.) ITALY. Weedy and cultivated places, sea level to 1300 m. (Eur., W. Asia to India, Siberia; N. Afr.; naturalized in N.A.) (Fiori, *Nuova Flora Analitica d'Italia*, vol. 1, 1923.) CENTRAL EUROPE. Frequent to common (but in places entirely absent), on dry sandy fields, sandy meadows, fallow ground, lawns, sunny hills, roadsides, field borders, walls, sandbars, vineyards, chiefly at lower altitudes, scattered to the Voralpens (Stubai Valley in Tirol 1700 m.). Often impermanent and merely transient. General Distribution: Europe (north to England and south Sweden), North Africa, adjacent Asia (east to the Himalaya). This small, easily recognized species is completely absent in scattered local areas (perhaps sometimes over-

looked) or has just recently appeared. In North Germany it is generally frequent and apparently indigenous, but becomes progressively scarcer both northwestward and northeastward (absent in particular in northern East Prussia). In Kaernten (Austria) reported as only introduced with grain and then disappearing. Also in Switzerland it has in places an adventive character and has only very recently appeared in some cantons (Tessin ca. 1906, Solothurn 1906). In North Germany this little plant belongs in many places to the spring flora of rather poor sandy fields. In other places it appears on lighter soils as a weed of crops. Recently *Holosteum* has appeared in many places as "anthropochore" on railroad beds and about stations. (Hegi, *Illustrierte Flora von Mitteleuropa*, vol. 3, 1909-1912. The account in the 2nd edition may be in press; the Caryophyllaceae were partly treated in vol. 3 pt. 2 fasc. 5, 1962, ending with *Arenaria*.) BALKANS. Grassy places, along roads. Recorded for 14 geographic subdivisions, Yugoslavia south to Crete. (Hayek, *Prodromus Florae Peninsulae Balcanicae*, Feddes Repert. Beih. 30 pt. 1, 1927).

SOVIET UNION. In grasslands on solonets, on sand, less often alluvial gravels, occasionally in cultivated ground. EUROPEAN SECTION. Upper Dnepr (south), Volga-Don (south), Trans-Volga (south), Black Sea, Crimea, Lower Don, Lower Volga districts. CAUCASUS. Cis-Caucasus, Dagestan, W., E. & S. Trans-Caucasus, Talysh districts. CENTRAL ASIA. Aral-Caspian, Pri-Balkh., Kyz-Kum., Kara-Kum., Gorny Turkm., Syr-Daria, Amu-Daria, Tian Shan districts. GENERAL DISTRIBUTION. Scandinavia (southern), Central Europe, Atlantic Europe, W. & E. Mediterranean, Balkans-Asia Minor, Iran, Indo-Himalayan region, W. China (Sinkiang). Sometimes infests cultivated ground, but does not attain the importance of a serious pest (Murav'eva in Fl. URSS vol. 6, 1936.)

NEAR EAST. In cultivated and sandy places of the entire region from sea level to montane and alpine sections, from Greece, Macedonia, Caucasus to Syria, Palestine, southern Persia. (Boissier, *Flora Orientalis*, vol. 1, 1867.) Fields and sandy places, common. (Post, *Flora of Syria, Palestine and Sinai*, 2nd ed. (by Dinsmore), vol. 1, 1932.) Nearly everywhere. (Parsa, *Flore de l'Iran*, vol. 1, 1951.) Tigris Plain, 250—300 m. (Rechinger, *Flora of Lowland Iraq*, 1964.) Kashmir only. (J. D. Hooker, *Flora of British India*, vol. 1, 1872.)

EGYPT. Only *H. liniflorum*, very rare, restricted to Sinai. (Tackholm, *Students' Flora of Egypt*, 1956.) NORTHWEST AFRICA. In cultivated fields, rocky and sandy pastures in the mountains from 300 to 2,300 m., in well watered and semiarid regions, rare on the coast. Tunisia, Algeria, Morocco. Geographic Distribution: Europe. Asia to Siberia, the Himalaya and India. (Maire, *Flore de l'Afrique du Nord*, vol. 9, 1963.) (Species not listed in Durand & Barratte, *Florae Libycae Prodromus*, 1910.)

Again there are silent and careless lies, and the outright error about

Siberia, but as might be expected from the longer and more intensive study, Old World information is more precise and more complete than that for the United States. There are some striking and suggestive resemblances, and some curious peculiarities. The story for England, with few records and failure of the plant to become thoroughly established or to spread, is exactly like that for New England. In view of its behavior in drier and warmer regions, it seems probable that climate has been the major hindering factor. In Central Europe there have been repeated introductions, just as in the United States; that it appears indigenous in places may indicate only that some introductions were very early. The long persistence without spread in some United States localities makes this seem plausible. Its rarity in southern France and Portugal, and presence only in the western part of North Africa, raise doubts about its being native in those places, in contrast with conditions farther east. Its prevalence and abundance in the Near East, and presence of closely related species (or infraspecific races), leave little doubt that it is native there. It may never be possible to determine its prehistoric limits. I suspect that most, possibly even all, of its present European area is due to the activities of man, beginning long before there were botanists there to observe.

CONCLUSION

Weeds have much to tell us, if only they are properly studied. They offer clues about man's pre-history, and may help us to unravel the origins of cultivated plants. They offer concrete evidence about adaptability and potentials for migration. But they must be given much more serious study than is now the case. Otherwise we shall merely go on expanding a dismal accumulation of silent and careless lies.

A science which deliberately ignores part of its facts commits partial suicide. Isolated reports of the occurrence of weeds may seem trivial in themselves, but cumulatively they become revealing and significant. If from shallow thinking, witless prejudice, and plain laziness we ignore them, we are continually losing data of unpredictable value for science.

NOTES

¹ Some of the highlights of this paper were used in a talk entitled "Weeds, Man and Science," given at the Missouri Botanical Garden's Symposium on the Systematics of Weedy Plants and Animals, St. Louis, 17 October 1964.

² Piehl, Martin A. 1962. *Holosteum umbellatum* L., an angiosperm new to Michigan. *Rhodora* 64: 222—225.

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